

Appln. No. 09/921,864  
Amdt. Dated December 23, 2003  
Reply to Office action dated August 26, 2003

REMARKS/ARGUMENTS

In the specification, the abstract has been amended as requested by the examiner. The paragraph on page 4 on the paragraph section on page 5 have been amended to correct minor editorial problems.

Claims 1-5 have been cancelled and claim 4 has been rewritten as new independent claim 6. Independent claim 6 should be allowable as it meets examiner's requirements as set forth in paragraph 21 of the office action although the claim has been modified to a minor extent.

Independent claim 7 and claims 8-10, dependent thereon, have been added to further define and protect applicant's invention.

Applicant's invention is directed to a circuit that utilizes a conventional pressure transducer (sensor) in a manner that allows the sensor to detect very low frequency pressure changes while retaining temperature stability.

The Phillips patent detects the inhalation and expiration breathing cycle and uses this information to reduce the positive pressure during expiration to aid in patient comfort.

A flow sensor is utilized to derive the pressure waveforms that are then monitored. The flow sensor generates an analog voltage, the signal then being processed to locate the transitions between inhalation and exhalation. This information in turn is used to change the gain of amplifier A2 (Figure 2) to which the breathing phase is

occurring and commands a change in the pump pressure to match or slave to the tidal pressure of the air moving in and out of the lungs of the patient. In essence, the inspiration positive airway pressure and the expiration positive airway pressure are dynamically controlled in phase with patient demand.

Although voltage clamping is by itself well-known (i.e. as shown in the McNichols et al reference), its use in the type of circuit claimed by the applicant (as set forth in independent claims 6 and 7) is unique. In particular, voltage clamping in the circuit of the present invention keeps the voltage excursions (due to inspiration and expiration, for example) within a control range and does not burden the feedback circuit with large and meaningless voltage changes. A lack of voltage clamping would provide too much time to re-stabilize the circuit, the circuit thus not being ready for the next breath within a desired short period of time i.e. two seconds later. Without it, the 20 p.s.i. delivered by the oxygen valve would otherwise force the sensor into saturation.

The primary Phillips patient, in essence, dynamically changes system gain according to inhalation and exhalation cycles in order to know when to apply positive airway pressure on inhalation and how much and when to reduce pressure on the exhalation for patient comfort. Pressure transducer 16 is connected to differential amplifier 44 (Figure 4) for the propose of developing an error signal  $V_e$  between the inhalation and exhalation pressures and the actual airway pressure detected by sensor 16. The desired inhalation exhalation voltages from converters 48 and 50 are fed to switch 52 at the proper time during the inhalation and exhalation phases but an initialization technique is not disclosed. Filters  $C_1, R_1$  and  $C_2, R_2$  in the Phillips circuit filters noise

and provides offset in time but does not initialize the circuit (quickly charge) as is provided by applicant's circuit.

The Czarnocksi patent, although disclosing a piezoresistive sensor to be used as a pressure sensor, only detects static pressure over a temperature range and not pressure changes as is the case in applicant's claimed invention.

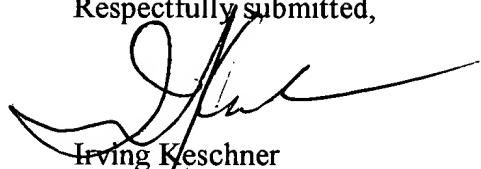
Claim 7, as newly presented, sets forth the initialization feature, *inter alia*, not disclosed in the primary Phillips patent. Dependent claims 8-10 set forth further features that enable the circuit to respond quickly to a patient's breathing cycle.

It is clear under the patent law that in order to reject claims as being anticipated by a prior art reference under 35 U.S.C. § 102, every element and limitation of the claimed invention must be found in a single prior art reference (see Brown v. 3M, 60 USPQ2d 1375, 1376 (Fed. Cir. 2001). The Phillips patent fails to disclose each of the components set forth in independent claims 6 and 7 and thus a rejection under 35USC102 is not warranted.

In Robotic Vision Systems Inc. v. View Engineering, Inc., 51USPQ2d 1948, 1954 (Fed. Cir. 1999), the Court reiterated the standard regarding obviousness rejections under 35 U.S.C. § 103. In particular, the Court noted that the combination of two or more references "must show some motivation or suggestion to combine the teachings", also citing In re Rouffet, 47USPQ2d 1453 (Fed. Cir. 1998). It is clear that the Phillips et al and Czarnocksi et al and McNichols et al references cited by the examiner do not motivate or suggest to someone skilled in the art that they can be combined to make applicant's claimed invention obvious without the use of hindsight.

Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,



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